ISSN: 2322 - 0902 (P)
ISSN: 2322 - 0910 (O)

International Journal of Ayurveda and Pharma Research

Review Article

RATIONALITY BEHIND FAST ACTING DRUGS IN AYURVEDA

Deepika Verma[1]*, Rajnikant[2]

*[1]Assistant Professor, Agad Tantra Department, Quadra institute of Ayurveda, Roorkee, Haridwar, Uttarakhand.
[2]Associate Professor, Kayachikitsa department, Quadra institute of Ayurveda, Roorkee, Haridwar, Uttarakhand.

ABSTRACT

Ayurveda like any other life sciences, has its integrity and potential to understand and determining the cure of rather potential serious and emergency conditions. There are numerous examples of such clinical success stories mentioned in our ancient texts ranging from various surgical and Para-surgical operations done by Acharya Sushruta during emergency, to the treatment of the patients who are nearby death due to intake of certain poisons incidentally or accidentally, or due to any other chronic medical illness such as fever, *Rakta-pitta, Kshataj-kasa, Grahni, Ura-Kshtaja* etc., due to excessive blood loss or to any *Marmabhighata* (injury to vital organs). All these require a highly skilled health care system which is beneficial not only for its preventing aspects but a curative one too and need of fast acting substances or procedures. Most of people who have certain experiences or knowledge of Ayurveda commonly say that Ayurvedic medicines or treatments are slower in action. Is it true ? if yes, why they are so? If not, then what is truth?

KEYWORDS: Ayurveda, Fast acting Ayurvedic medicine.

INTRODUCTION

Ayurveda is basically a system of healthy living. That means, it is not merely a medical system, it thinks beyond and before that. Ayurveda teaches about living healthy and preventing diseases more than just treating a health problem. Moreover, it's a science based on natural substances and natural processes in universe. Hence, treatment and medicines of Ayurveda follow those rules to stay in harmony with nature. For example, in case of Arthritis, the problem is situated at deeper structures like bones and joints. Then while treating with Ayurvedic drugs and therapies it is not possible to reach them in a day or two. So the medicines will take their own cycles according to the natural process to metabolize and reach there. Also these treatments will not aim at masking the pain in the joints but aim to support the tissues there and to prevent further damage. So it is normal to feel that the medicines are not acting or acting slowly.

Another example when there is fever, it is considered as body's effort to fight against the foreign material by burning it out, throwing it out or by creating an intolerable situation inside for that material to survive. So the drugs or even food advice during fever would be aimed at supporting the body in that fight and providing a suitable medium where it heals itself. It won't be aimed at masking the temperature or just to lower the temperature of the body. This is the reason it appears as if Ayurvedic drugs are doing slowly.

Another reason is complexity. If a disease has occurred by the influence and involvement of various matters like genetic factor, environmental factors, multiple tissue involvement, widespread in the body etc and so on, it would definitely take longer time to simplify them.

These are just the few examples. There are so many other factors which decide if the medicine act fast or slow.

Aims and Objective

To understand more about this rationality, we may have a bit about the concept of Ayurved therapy and its medicines, as slow and fast actions of any drug depends upon variable factors.

Conceptual Review

Bhavaprakasa defines drug as a substance, by which the physician cures the disease. According to *Caraka Samhita*[1] there is no substance in the world, which cannot be used as a drug, when used rationally and with a definite objective. Commonly, the drugs are derived from natural sources comprising of plants, animal parts and their products, marine products, metals and minerals. *Caraka* in *Vimanasthana* gives an outlay of the criteria for the selection and use of various substances used in the treatment of disease as[2]:

1. *Prakrti*-nature of substance
2. *Guna*-quality of substance
3. *Prabhava*-specific action
4. *Desa*-place of their growth /production and use
5. *Ritu*-season of collection
6. Manner and method of their preservation and storage
7. Methods of preparation of medicaments
8. *Matra*-dosage
9. Modes of administration
10. The persons for whom they are indicated
11. Their capabilities of exciting or alleviating the *Dosas*
12. If there are other substances that possess similar virtues, they may also be considered for use after examining them carefully.

Caraka in Sutrasthana [3] describes the qualities of ideal drug –having abundant supply (*Bahuta*), wide applicability (*Yojnyatva*), can be prepared in many forms and by different processes (*Anekavidha kalpana*) and is dependable with valuable qualities (*Sampat*).

However, some drugs could be toxic or have undesirable effects. Various methods were developed to reduce their toxic effects and enhance therapeutic properties. For example - *Semecarpus anacardium* (*Bhallataka*) fruits after removing the attachment of the thalamus are soaked in cow's urine for seven days followed by cow's milk for seven days. They are then put into a bag containing coarse brick powder with which they are rubbed carefully, to reduce the oil content. The fruits are then washed with water and dried in air. Likewise, Realgar (*Manahsila*) is purified by triturating it seven times with expressed juice of *Sesbania grandiflora* leaves (*Jayanti*) or *Zingiber officinale* rhizome (*Srngbera*) for making it suitable for medicinal use.

Table 1: Showing effects of various factors on the body

Factors	Influence on the body
Age	Infants and very elderly tend to be most sensitive to the effects of drugs. There are important differences in the absorption, distribution, metabolism and excretion of drugs. Aging bring about changes in body composition and organ function.
Body weight	Considerably overweight patients may require an increase in dosage to attain the same therapeutic response as the general population. Conversely, patients who are underweight tend to required lower dosage for the same therapeutic index.
Metabolic Rate	Patients with higher than average metabolic rate tend to metabolize drug more rapidly, thus requiring either larger doses or more frequent administration.
Illnesses	Pathological conditions may alter the rate of absorption, distribution, metabolism and excretion. For example, patient in shock have reduced peripheral vascular circulation and will absorb intramuscular or subcutaneous injected drugs slowly. Patients with vomiting may not be able to retain the drugs in stomach long enough for dissolution and absorption. Patients with kidney diseases must have significant reduction in the dosage.
Psychological aspects	Attitude and expectations play a major role in a patient's response to drugs and therapy and willingness to the medications as prescribed. Placebo is very good example.
Tolerance	Tolerance occurs when a person begins to require a higher dosage to produce the same effects that a lower dosage once provided.
Dependence	Also known as addiction or habituation occurs when a person is unable to control the ingestion of drugs. It can be physical in which person develops withdrawal symptoms if the drug is withdrawn for a certain period, or Psychological in which the person is emotionally attached with the drugs.
Cumulative effects	A drug may accumulate in body if the next dosage is administered before the previously administered dose has been metabolized or excreted. Excessive drug accumulation may result in drug toxicity. A common example is alcoholic beverages.

Variable factors influencing drug action

1- Quality of the drug/ingredients
2- Dosage Forms
3- Route of administration
4- Anupana/Adjuvant
5- Properties of the drug
6- Time of administration
7- Specific affinity to target organ / Tissue (Single drug study)

Quality of the drug/ingredients

Most Ayurvedic drugs are in compound formulations, and the physician even the experienced *Vaidyas* do never know that which drug is actually working.

There are further considerations of great importance in determining quality of plant ingredients in herbal formulations, including place of origin, method of cultivation, time, season, methods of collection and storage. All these parameters play important roles in final plant quality and should therefore be applied to all herbal ingredients.

Many plants, though grown with great care and nourishment, are not found to be effective, because they lack the necessary properties. For example, relatively smaller specimens of *Haridra* (Haldi, Turmeric), grown under demanding, dry conditions in are far more potent, with greater concentration of curcumin, than the same variety grown in damp conditions.

Ayurveda recommends not collecting plants during the rainy season or immediately after it. This is to prevent the *Veerya* being diluted. Certain plants, especially root tubers, have to remain underground for a specified period before they are collected. This ensures better therapeutic activity. Certain plant material loses its activity merely from exposure to sunlight e.g. *Brahmi*. Some plants need to be processed in particular materials to obtain their full efficacy e.g. *Piper longum* in milk.

Such nuances in Ayurveda have to be studied more deeply in order to achieve appropriate 'gold standards' of quality assurance for herbal ingredients. This opens up the need for developing Ayurveda-based methodologies of quality control. Formulating ways for these variables to be measured is a non-trivial scientific challenge. Only when these have been developed, can herbal ingredients for Ayurvedic preparations with truly consistent quality be made available.

Even in today's world the following words of Charaka are relevant to its being fulfilled."*Thadeva yuktam bhaishajyam yadarogyaya kalpathe*" broadly meaning medicine is that which restores health and brings longevity.[4] "*Suddhastu Shamayet nacha kopayet*" meaning, a pure medicine is, one which when eliminating a disease, should not give rise to even the slightest cause for another disease.[5]

Dosage Forms

It may be defined as physical form of chemical compounds used as drug or medications intended for administration. In other words, dosage forms are the means by which drug molecules are delivered to the site of action within body tissues. The importance of various dosage forms in Ayurveda is to make it compatible and palatable to the patients. It is also used to increase the shelf life of the particular preparation. In Ayurveda different forms of preparations have been explained and are divided into 3 main types- Liquid, Semisolids and solid dosage forms.

Table 2: showing liquid, semisolid and solid dosage form of Ayurveda [6]

Liquid Dosage Forms/ *Kalpana*	**Semisolid Dosage Forms / *Kalpana***	**Solid Dosage Forms / *Kalpana***
Swarasa	Kalka	Churna
Kashaya (Kwath)	*Avaleha*	*Raskriya/Ghanvati*
Hima	*Lepa*	*Khanda*
Phanta	*Sikta taila*	*Gudapaka*
Pramathya	*Malahara*	*Guggulu*
Ushnodaka	*Upanaha*	*Sattwa*
Ksirapaka		*Lavana*
Laksharasa		*Ayaskrti*
Mansa rasa		*Masi*
Mantha		*Ksara*
Udaka		*Vati*
Panaka		*Varti*
Arka		
Sarkara		
Sneha		

Liquid preparations are preferred over solid preparations for faster actions. Here *Swarasa* and *Kshayas* need a special attention. Water soluble and transformed contents of theses preparations are readily absorbed into the circulation. Also the preparations which are highly water soluble e.g, *Kshara* (Alkali), *Lavana* (Salt), *Arka* etc. are preferred in given conditions. To a certain extent, *Sneha* especially *Ghrita* (Medicated Ghee) preparations are absorbed rapidly.

Another form of preparations is chewable form like *Lehays* and *Paanaka*. Drug introduced through oral route are metabolizsed in liver or excreted in bile. Thus they are inactivated by hepatic process before it can reach the general circulation and distributed to the site of action. It is called as first-pass metabolism. This effect on drug can be minimized largely by utilizing the sub-lingual administration. Drug in form of *Lehaya* and *Paanaka* spreads sublingually and have access to entry of direct circulation. Many drugs dispersed in chewable preparations are absorbed prior to gut absorption. Hence they act faster.

Aasava and *Arista* being in alcohol form are absorbed rapidly, as alcohol enters into general circulation before it undergone digestion. Hence drugs can be prescribed in these medicated alcoholic forms in deserving and suitable patients.

Another example is *Ghankriya* that need a special mention here, that over the period of time it has been observed that some preparations like *Kshaya* are going out of use, hence as an innovative efforts pharmacies have tried to improve the compliance of such formulation by converting them into *Pravhikshayas* and in tablets forms for their better suitability and enhanced shelf life.

Route of Administration

Aushada sevan margas are the routes by which different drug preparations are administered into body depending upon *Doshas*, *Dushayas* involvements in a particular disease along with *Bala*, *Satyma, Satva, Agni* etc of patients and *Yukti* of physician. The route of drug administration such as intravenous, intra arterial is not much developed in Ayurveda. This may be due to the fact that Ayurveda believes in using the drug as a whole rather than using its single molecule. Oral route has certain disadvantage by which drugs activity is reduced considerably in hepatic system. The selection of suitable route in accordance with the site of disease can promote the rate of absorption and in turn the rate of action.

For instance, external application of drug/ poultice /oil directly to the surface of skin/inflamed joint lead to absorption of the drug in the body and produces local effects than oral routes. Local application done after fomentation exhibits faster action.

Similarly, delivery of the drug through nasal passage provides faster relief. It provides rapid delivery of the drug across larger surface area of mucous membrane of respiratory tract and pulmonary epithelium. This route of administration is mainly used for drugs that are gases or those can be dispersed in an aerosol in modern medicine. This route is particularly effective and convenient for patients with respiratory complaints, in the disorders of head; certain systemic metabolic disorders, endocrinal disorders and disease of nervous system, drug through nose are preferable.

Likewise, *Guda marga* (rectal route) is also preferred for faster action of drugs in certain conditions, as rectum has a greater rate of absorption bypassing hepatic system. It is said that 50 % of the drug administered through rectal route reach instantly into systemic circulation. *Karna*-through ears/*Akshi*-through eyes/*Mutra marga*-through urinary passage/*Yoni marga*- through vagina etc. are the numerous examples of drug administration explained well in Ayurveda, hence a well qualified physician has to be aware of all these routes of drug administration to ensure proper treatment and faster action.

Anupana

Under the roof of drug administration, a specialized concept of Ayurveda, known as *Anupana* [7] comes under, which forms an integral part of treatment? It brings certain changes in a substance along with which it is administered. The primary action of *Anupana* is to carry the medicine into systemic circulation rapidly. For example, oil added to water spreads quickly on the surface of water, so the medicine along with *Anupana* spreads in the body and produces its effects when administered with appropriate *Anupana*. Some more common examples of *Anupana* that provide faster action are - *Madhu* (Honey), *Sarkara* (Sugar), *Madhya* (Alcohol).

Medicine combined with honey spreads all over the buccal cavity in the mouth and promotes buccal absorption as buccal route is preferred over gastric route for faster action. Like, all the water soluble components are absorbed and spread in body easily along with glucose components. Hence drug mixed with sugar is more palatable and absorbed faster than the drug alone. Similarly the drug combined with alcohol has a capacity to bypass liver and enter into systemic circulation by virtue of its Vyavayi, *Sukshma, Laghu* and *Tikshna* properties. Hence the medicine combined with the alcohol is absorbed relatively faster and exhibits quicker results.

Properties of drug

Ayurveda defines 20 physical properties viz.

1. Heavy (*Guru*) and Light (*Laghu*)
2. Mild (*Manda*) and Strong (*Tikshna*)
3. Cold (*Sheet*) and Hot (*Ushna*)
4. Greasy (*Snigdha*) and Dry (*Ruksha*)
5. Smooth (*Slakshan*) and Rough (*Khara*)
6. Solid (*Sandra*) and Liquid (*Drava*)

7. Soft (*Mridu*) and Hard (*Kathina*)
8. Stable (*Sthira*) and Mobile (*Sara*)
9. Microfine (*Suksma*) and Dense (*Sthula*)
10. Non sticky (*Visada*) and Sticky (*Picchila*)

These physical properties are related to their effects on body and are normally related to specific tastes and medicine that follow the rule work in concert with the effects of related taste. For example, if a medicine is sweet and heavy, means it is heavy to digest. The nutrients that normally accompany the sweet taste support this general heaviness effect on body. However, if physical properties of a medicine are different than predicted by taste, then that medicine becomes more powerful in combating the condition. For example, if a sweet medicine is also *Ushna* in property, it has a more powerful effect in pacifying *Vata* problems.

Drugs having *Tikshna* and *Suksma Guna* are absorbed rapidly. Ayurveda too advocates certain manipulations (*Sanskara*) that a drug undergoes before coming to the body system (*Samskaram Gunantradanam*). The property, *Suksma* can be attributed with repeated maceration (*Bhavana*) and the drug will become capable to reach the microcirculation and provide faster action. Many poisonous herbs are included in the Ayurvedic medicine. Poison spreads in the body instantly by virtue of their properties like *Vyavayi, Tikshna*, *Suksma* and *Laghu*. *Sneha Pravicara* mentioned in texts are of greater utility here. They help in increasing the palatability and promoting the absorption in form of fine fat globules caused by emulsifying.

Time of administration: Various Ayurvedic disciples suggest frequent administration of medicine in small doses in acute states of disease (*Muhurmuhur*).[8] Such application method may be followed in any condition where instant relief is desired.

Focus on single drug study: Recently the popularity of *Ayurvedic* drugs has increased globally because of its safety, lack of side effects and for its ability to eliminate the root cause of disease etc. For this reason several pharmaceutical companies mushroomed and excessive overexploitation of natural resources took place and the standards of pharmaceutical drugs came in question. Maintenance of quality Ayurvedic drugs with such diverse ingredients in today's world poses a challenge. To achieve this, cultivation and afforestation efforts are taking place rapidly; Researches to revalidate the claims of efficacy of drugs and development of new forms of drugs are being conducted, Pharmacopoeias such as "The Ayurvedic Pharmacopoeia of India" and "The Ayurvedic Formulary of India" have been published and "Good Manufacturing Practices" (GMP) have been enforced in order to ensure quality control of Ayurvedic drugs.

Single herb molecular study is the need of time. We have to focus on single herb based study for the effectiveness and standardization of Ayurvedic drugs to meet the challenges of present and future. Some common examples so far given in Ayurveda are:

Sanskrit name	**Latin Name**	**Target organ/ Tissue Affected**
Ahiphena	*Papaverum somniferum*	Gastro-intestinal tract & nervous system
Bhanga	*Cannabis sativa*	Uro-genitory system & Central nervous system
Bhallataka	*Semecarpus anacardium*	Skin & mucous membrane
Dhatura	*Datura stramonium*	Respiratory system
Gunja	*Abrus precatorius*	Circulatory system
Karvira	*Nerium odorum*	Heart
Langali	*Gloriosa superb*	Female reproductive system
Vatsanabhi	*Aconitum ferox*	Circulatory system
Visamusti	*Strychnos nux vomica*	Nervous system
Kapikachu	*Mucuna pruritens*	Nervous System
Arjuna	*Terminalia arjuna*	Circulatory system
Guduchi	*Tinospora cardifolia*	Immune system
Shallaki	*Boswellia serrata*	Locomotor system
Guggulu	*Commiphora mukul*	Metabolism
Bhumiamla	*Amarathus niruri*	Hepatic tissues

CONCLUSION

Fast action of any drug depends upon number of variables mentioned in Ayurveda, and can easily be applied by combining clinical trials and various dynamic principles described in Ayurveda. Like any other science, *Ayurveda* had never been static. Its practitioners had been innovative and dynamic in their therapeutic practice, discovered newer

medicines and formulations implicating in various disorders. In *Vedic* period, mainly plants were used as medicine but, later gradually the use of metals, minerals, marine and animal derivatives (in their purified forms) became popular in practice; as these could be stored for longer period, required less dosage, were fast acting and with multiple indications. Acceleration of drug action is the need of time. Any small step in this direction will promote the status of Ayurveda.

REFERENCES

1. Charak Samhita, Elaborated Hindi Commentary Part-1, by Pt. Kashinath Pandey & Dr Gorakhnath Chauturvedi, Chaukhamba Bharti Academy, 2017, Sutra-Sthana Chapter-1, slok no.123,page-48.
2. Drugs in Ayurveda//www.tkdl.res.in/tkdl/Lang German/Ayurveda/Ayu_Drugs.asp?GL=
3. Charak Samhita, Elaborated Hindi Commentary Part-1, by Pt. Kashinath Pandey & Dr Gorakhnath Chauturvedi, Chaukhamba Bharti Academy, 2017, Sutra-Sthana Chapter-9, slok no.7,page-196-197.
4. Charak Samhita, Elaborated Hindi Commentary Part-1, by Pt. Kashinath Pandey & Dr Gorakhnath Chauturvedi, Chaukhamba Bharti Academy, 2017, Sutra-Sthana Chapter-1, slok no.135,page-49-50.
5. Charak Samhita, Elaborated Hindi Commentary Part-1, by Pt. Kashinath Pandey & Dr Gorakhnath Chauturvedi, Chaukhamba Bharti Academy, 2017, Nidana-Sthana Chapter-8, slok no.23,page-667.
6. Arun et al, Various Dosage forms of Ayurveda, UJAHM, 2014,02(04),page 20-23.
7. Charak Samhita, Elaborated Hindi Commentary Part-1, by Pt. Kashinath Pandey & Dr Gorakhnath Chauturvedi, Chaukhamba Bharti Academy, 2017, Sutra-Sthana Chapter-27, slok no.319,page-563.
8. Sharangdhara Samhita- Jeevanprada Hindi Commentary, by Dr.Smt.Shailaza Srivastava, Chaukhamba Orientalia, 2011, Purvakhand, Chapter-2, slok no.2-3, page-15.

Cite this article as:
Deepika Verma, Rajnikant. Rationality Behind Fast Acting Drugs in Ayurveda. International Journal of Ayurveda and Pharma Research. 2018;6(2):45-50.

Source of support: Nil, Conflict of interest: None Declared

***Address for correspondence**
Dr Deepika Verma
Assistant professor,
Agad Tanta Department
Quadra institute of Ayurveda,
Roorkee, Haridwar, Uttarakhand.
Ph. 8054114530
Email: dr.deepikaverma88@gmail.com